WHEEL VELOCITY DEPENDENCE OF MAGNETIC PROPERTIES OF SmCo RIBBONS

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Today permanent magnets based on rare-earth metals have an important value. They are used in many applying areas, e.g. in electric motors, medicine, electronics. One of the main aims is getting permanent magnets with high magnetic properties that allow to minimize magnets and use in new applying areas.

There are a few ways of increasing of magnetic properties. One of them is variation of getting options. The aim of this work is an investigation of dependence of fundamental as-spun SmCo -based magnetic properties on a wheel velocity.

$SmCo_5$ alloys with additional Sm 7 wt% were prepared by arc melting. $SmCo_5$ ribbons were prepared by melt-spining. Measurements of the magnetic properties were made with the MPMS-XL-7 EC squid-magnetometer at room temperature.

The measurements are shown in table.

Dependence of specific saturation magnetization, specific remanence , and coercivity on Cu wheel velocity in the as-spun $SmCo_5$ ribbons.

V, mps	σ_s, $\frac{emu}{g}$	σ_r, $\frac{emu}{g}$	H_c, kOe
30	69,0	46,3	8,8
40	65,6	46,8	23,3
50	88,6	41,9	4,2

It may be concluded that an increasing of Cu wheel velocity leads to getting nanocrystalline state, and amorphous state at maximum wheel velocity. It’s a good idea to anneal last one to provide optimal nanocrystalline state.